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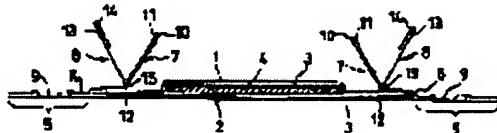
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## (54) ABSORBENT ARTICLE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an absorbent article used for throwaway diapers, etc., to be provided for babies or incontinent persons.

**SOLUTION:** An absorbent article comprises a liquid permeable top sheet 1, a liquid impermeable back sheet 2, an absorption member 4 disposed between the both sheets and having hydrophilic sheets 3 on both surfaces, and side flaps 5 extended outward from both side edges of length of the absorption member 4, the side flap 5 is formed of a part of the back sheet 2 extended from each side edge of the absorption member 4, and a side sheet 6 disposed on it, and a first three-dimensional gather 7 disposed inward and a second three-dimensional gather 8 disposed outward are formed of the side sheet 6 along each side edge of length of the absorption member 4 on the top sheet 1 where the hydrophilic sheet 3 is positioned.



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CLAIMS

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## [Claim(s)]

[Claim 1] The absorber which has been arranged between TOPPUSHI-TO of liquid permeability, the backseat of liquid impermeability, and both [ these ] sheets, and has arranged the hydrophilic sheet to both sides, In the absorptivity goods which have the side flap which extends outside from the edges on both sides of the longitudinal direction of said absorber said side flap It is formed from the part into which said backseat extends from the edges on both sides of an absorber, and the sideseat arranged on it. Furthermore, absorptivity goods characterized by forming of the sideseat the 1st solid gathers arranged at the inner sense, and the 2nd solid gathers arranged outward along with the longitudinal direction edges on both sides of said absorber on TOPPUSHI-TO in which said hydrophilic sheet is located.

[Claim 2] Said solid gathers turn up the sideseat which applied on the absorber and has been arranged from the side edge of said side flap on the way. The 1st solid gathers which have arranged the elastic body in the state of expanding at the clinch point, and turned to the inside by making into a standing up point the boundary line of a junction field with TOPPUSHI-TO located on the hydrophilic sheet which extends from the edges on both sides of an absorber are formed. Furthermore, an elastic body is arranged in the state of expanding in the side edge section of the part by which said sideseat was turned up. Absorptivity goods according to claim 1 which paste up the part located in the standing up point of said 1st solid gathers of the sideseat of the turned-up part, consider as a standing up point, and are characterized by forming the 2nd solid gathers which turned to the outside.

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**DETAILED DESCRIPTION****[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention relates to the absorptivity goods used for the usage \*\*\*\* diaper offered as the object for sucklings, or an object for incontinentia persons about absorptivity goods.

**[0002]**

**[Description of the Prior Art]** The usage \*\*\*\* diaper which is one of the conventional absorptivity goods has composition which has arranged the absorber which consists of a curdy pulp and superabsorbency polymer (it is called Following SAP), a hydrophilic sheet, etc. between TOPPUSHI-TO of liquid permeability, and the backseat of liquid impermeability, and urine is absorbed by the absorber through a surface sheet. In recent years, thin-shape-izing and miniaturization progress from a viewpoint of facility and PD cost reduction, and a disposable diaper reduces the operating rate of the curdy pulp with the large volume used for the absorber as the result, and is in the inclination for the volume to increase the rate of small SAP with a large absorption capacity.

[0003] However, since the rate of SAP which absorbs urine and body fluid is slow, the rate (henceforth rate of absorption) which absorbs urine and body fluid from a surface sheet became slow, therefore the problem that urine and body fluid begin to leak from a disposable diaper has produced the usage \*\*\*\* diaper which consists of thin absorbers with the high rate of SAP.

[0004] Generally arranging solid gathers and corresponding along with the flank of absorptivity goods, as one approach for solving the trouble of the leakage by the fall of the rate of absorption of this thin absorber, is performed. For example, what adjoined elastic shrinkage-characteristics reg gathers and said reg gathers, and has arranged solid gathers to the inside sense (JP,6-93901,B), the thing (JP,62-223303,A) which has arranged solid gathers outward are proposed.

[0005] Moreover, two solid gathers are arranged and there is a proposal that leakage will be decreased more, also to elimination of a lot of urine etc. For example, the standing-up line of that (JP,2-174845,A, JP,63-21901,A) from which the standing-up line of two solid gathers differs, the thing (JP,3-218752,A) which constitutes solid gathers from an another member, the thing (JP,4-218159,A) which has arranged the standing-up line of solid gathers besides an absorber, and solid gathers is arranged on an absorber, and what constituted solid gathers from a top sheet (JP,5-51324,U) is proposed.

**[0006]**

**[Problem(s) to be Solved by the Invention]** however -- although indicated by above-mentioned JP,6-93901,B and JP,62-223303,A -- a case -- solid gathers -- one -- arranging -- having -- \*\*\*\* -- a sake -- leakage prevention of excrement, such as a lot of urine, -- enough -- \*\*\*\* -- it cannot say.

[0007] Moreover, in that from which the standing-up line of two solid gathers indicated by JP,2-174845,A and JP,63-21901,A differs, since between two solid gathers does not have absorptivity ability, if excrement, such as urine, collects, it may leak by motion of a wearer. In order to form solid gathers by another member, complicated processing processes, such as cutting, attachment, etc. of another member, are needed, and it is not desirable on manufacture what is indicated by JP,3-218752,A. In what has arranged besides an absorber the standing-up line of the solid gathers indicated by JP,4-218159,A, it may not have the absorptivity ability to the urine exceeding solid gathers etc., but may lead to leakage.

[0008] The standing-up line of the solid gathers indicated by JP,5-51324,U is arranged on an absorber, and in what formed solid gathers with the top sheet, since an absorber is divided by solid gathers, the surface area of the absorber touched directly may become small, and the urine from a wearer etc. cannot fully demonstrate the absorptivity ability which an absorber has, but may lead to leakage. Moreover, since solid gathers are arranged on the absorber, it is bulky, and the fit nature especially in the length-from-the-crotch-to-the-cuff section worsens. Moreover, since solid gathers are formed with the top sheet of a hydrophilic property, the leakproof effect by solid gathers cannot fully demonstrate.

[0009] This invention aims at solving the above-mentioned trouble in absorptivity goods equipped with the above solid gathers. Namely, it excels in the effectiveness of preventing leakage of the urine by the fall of the rate of absorption of a thin absorber etc., and aims at offering the absorptivity goods which can be manufactured efficiently.

**[0010]****[Means for Solving the Problem]**

(1) TOPPUSHI-TO of liquid permeability [ this invention ], and the backseat of liquid impermeability, In the absorptivity goods which have the side flap which extends outside from the edges on both sides of the longitudinal direction of the absorber which has been arranged among both [ these ] sheets and has arranged the hydrophilic sheet to both sides, and said absorber The part into which, as for said side flap, said backseat extends from the edges on both sides of an absorber, Along with the longitudinal direction edges on both sides of said absorber, on TOPPUSHI-TO in which it is formed in from the sideseat arranged on it, and said hydrophilic sheet is located further, by the sideseat It consists in the absorptivity goods characterized by forming the 1st solid gathers arranged at the inner sense, and the 2nd solid gathers arranged outward.

[0011] This invention (2) Moreover, said solid gathers The sideseat which applied on the absorber and has been arranged from the side edge of said side flap is turned up on the way. The 1st solid gathers which have arranged the elastic body in the state of expanding at the clinch point, and turned to the inside by making into a standing up point the boundary line of a junction field with TOPPUSHI-TO located on the hydrophilic sheet which extends from the edges on both sides of an absorber are formed. Furthermore, an elastic body is arranged in

the state of expanding in the side edge section of the part by which said sideseat was turned up. It consists in the absorptivity goods of the above (1) which pastes up the part located in the standing up point of said 1st solid gathers of the sideseat of the turned-up part, considers as a standing up point, and is characterized by forming the 2nd solid gathers which turned to the outside.

[0012]

[Embodiment of the Invention] TOPPUSHI-TO of liquid permeability [ goods / of this invention / absorptivity ], and the backseat of liquid impermeability. The absorber which has been arranged among both [ these ] sheets and has arranged the hydrophilic sheet to both sides. On TOPPUSHI-TO in which the hydrophilic sheet which consists of a side flap which extends outside from the edges on both sides of the longitudinal direction of said absorber, and extends from the edges on both sides of said absorber further is located, by the sideseat The 1st solid gathers arranged at the inner sense and the 2nd solid gathers arranged outward are formed. In this case, the part which forms solid gathers is made into liquid impermeability as a sideseat. By establishing the standing up point of solid gathers using what made liquid permeability the part which forms a side flap on the top sheet on the hydrophilic sheet which extended from the edges on both sides of an absorber Since it is absorbed with a hydrophilic sheet, and a hydrophilic sheet is led, and it is guided to an absorber and is again absorbed even when urine exceeds the 2nd solid gathers, leakproofness high absorptivity goods can be offered.

[0013] moreover, \*\* -- since solid gathers were not arranged on the absorber which becomes high, spatial allowances arose, solid gathers were hard to be crushed between the wearer and the absorber, and \*\* has arranged solid gathers on hydrophilic sheets, such as low tissue, further -- especially, it becomes the thing excellent in the fit nature in the length-from-the-crotch-to-the-cuff section, and leakproofness high absorptivity goods can be offered.

[0014] Moreover, since the cutting and lamination process of said 1st and 2nd solid gathers decrease compared with the manufacture approach which formation by the sheet which continued from the side flap of is attained in order to turn up the sideseat arranged having applied on the way and to form it on an absorber from the side edge of said side flap, and forms solid gathers using a single or two or more another members, a process is simplified and they are desirable on manufacture. Moreover, since it is not necessary to set the hydrophilic sheet which extended from the absorber side edge section especially to circumference opening of a foot, and to cut and remove it as a trim, a process is simplified, and it leads to improvement in a manufacture rate, and is desirable on manufacture. Furthermore, the leakproof effect by solid gathers is also high by forming solid gathers by not a top sheet but the hydrophobic or water-repellent sideseat of a hydrophilic property.

[0015] The ingredient used for below by each part and it which constitute the absorptivity goods of this invention is explained.

[Top sheet] For the top sheet used, the basis weight in which the diameter of fiber of configuration fiber is formed from hydrophilic fiber 4 deniers or less is 10 - 40 g/m<sup>2</sup>. The nonwoven fabric of liquid permeability, textile fabrics, etc. are used. The bicomponent fiber which consists of combination of two or more components, such as polypropylene, polyethylene, fiber that consists of polyester or polyester, polypropylene, and polyethylene, as configuration fiber of the above-mentioned nonwoven fabric and textile fabrics is sufficient, and especially, although the bicomponent fiber of low melting point polyester / polyester, polyester / polyethylene, and polypropylene/polyethylene is desirable from a strong field, especially a limit is not received.

[0016] Moreover, if the bigger fiber as the above-mentioned configuration fiber than 4 deniers is used, the front face where a user touches will carry out "\*\*\*\*\*" "coarsely", and the touch will worsen. The basis weight of a top sheet is 40 g/m<sup>2</sup>. It exceeds, and if it increases, urine and body fluid will be held at a top sheet, and the front face of a top sheet was touched by hand, or it becomes and is moist, displeasure is given to a user, and it is not desirable. Moreover, a top sheet may be constituted from a single sheet, and may consist of sheets of two or more sheets, such as changing a sheet with an absorber top face and a flank flap. Moreover, you may be the same material, although each sheet may use another material in case a top sheet is constituted from a sheet of two or more sheets.

[0017] [Backseat] The backseat used consists of a material which sticks a liquid impermeable film, a liquid impermeable film. and nonwoven fabrics and textile fabrics, such as polyethylene.

[0018] [Absorber] The superabsorbency polymer which is a high absorptivity ingredient is mixed with curdy pulp, and, as for the absorber used, what is further covered with the hydrophilic sheet is desirable. Moreover, thermocompression bonding of 3 - 60% of the weight of the heat welding nature matter may be mixed and carried out to curdy pulp. Although especially the configuration of said absorber is not restricted, it may be the thing of the shape of a layer which the independent layer which uses curdy pulp as a principal component is sufficient as, and mixed the high absorptivity ingredient to curdy pulp at homogeneity, for example. Moreover, you may be the thing of a configuration so that the uniform layer which consists of a high absorptivity ingredient by two independent layers which use curdy pulp as a principal component may be put. As a configuration of an absorber, although there are a sandglass mold, a rectangle mold, a T character mold, etc., especially a limit should just be a configuration which there is nothing, and it is not too large in a length-from-the-crotch-to-the-cuff field, and is not too narrow.

[0019] There is a thing with a fiber length of 5mm or less obtained as curdy pulp by \*\*\*\*(ing) a chemical pulp sheet or a mechanical pulp sheet with a grinder. As a pulp raw material, not only a needle-leaf tree but a broad-leaved tree, straw, a bamboo, and a kenaf are applied. Generally the amount of this pulp used is 50 - 400 g/m<sup>2</sup>, although it differs by whether it uses independently, or two or more laminatings are carried out and it uses with the target absorber, or other absorbers are used together. It is carried out.

[0020] As a superabsorbency polymer, a starch system, a cellulose system, and a synthetic polymer system are mentioned. Namely, the saponification object of a starch acrylic-acid (salt) graft copolymer and a starch ethyl-acrylate graft copolymer, The saponification object of a starch METAKURU acid methyl graft copolymer, the saponification object of a starch acrylonitrile graft copolymer, The saponification object of a starch acrylamide graft copolymer, the saponification object of a starch acrylonitrile 2-acrylamido-2-methyl-propane-sulfonic-acid graft copolymer. Although the polyethylene oxide over which the bridge was constructed with the acrylic-acid (salt) polymer and the acrylic acid, the bridge formation object of sodium carboxymethylcellulose, the bridge formation object of a poly vinyl alcohol maleic-anhydride reactant, etc. are illustrated The urine, the body fluid, and water of 20 times or more of a self-weight are absorbed, and the thing of a sodium polyacrylate system is [ among these ] the most suitable from the point of absorptivity ability.

[0021] the amount of distribution of a superabsorbency polymer -- the dryness of curdy pulp -- 10- of total weight -- it is 15 - 300% preferably 500%. The superabsorbency polymer of this amount is substantially distributed over homogeneity to curdy pulp, and it is rare for a mutual interference to be able to minimize the particle, to contact continuously, and to form a permeability barrier, when it absorbed and swells, a superabsorbency polymer penetrates urine and body fluid in the direction of a three dimension, and it absorbs.

[0022] Moreover, a fibrous thing is desirable when it considers mixing with curdy pulp as heat welding nature matter. As heat welding nature matter, polypropylene, polyethylene, polyester, the poly vinylidene, acrylic resin, Nylon, etc. are raised. Moreover, the bicomponent fiber which consists of two or more components, such as polyester, polypropylene, and polyethylene, is sufficient, and the bicomponent

fiber of low melting point polyester / polyester, polyéster / polyethylene, and polypropylene/polyethylene is desirable from a strong field especially. Especially a limit is not received, although the diameter of fiber has desirable about 1-5 deniers and a 3-30mm thing is suitable for fiber length for mixing with curdy pulp.

[0023] By carrying out thermocompression bonding of these mat layer by the pressure more than fixed, the skeletal structure by the heat welding nature matter is formed, and it becomes possible to have the reinforcement of the mat layer itself at the time of humidity. Although there are a heat press roll, hot air drying equipment, a microwave heating machine, an infrared heater, etc. and it is not especially restricted as the approach of thermocompression bonding, propagation and the heat welding nature matter just form [ heat ] \*\*\*\*\* skeletal structure in a mat layer at homogeneity.

[0024] As a hydrophilic sheet, what is necessary is just the sheet of the hydrophilic property of tissue, an absorbent paper, a hydrophilic nonwoven fabric, etc., for example.

[0025] You may be the approach of forming the shape of a field which continues so that the consistency of an absorber may become equal substantially over the whole with a roll with a peripheral surface smooth as the compression approach of an absorber etc., and may be the approach of forming embossing of a pattern [ that the consistencies of an absorber differ partially and urine and body fluid are led in a lengthwise direction and the direction of slant ] array with the roll whose peripheral surface is concave convex. In the case of the approach of forming embossing, a compression zone and the incompressible section may be formed in continuation and which a discontinuous condition.

[0026] Moreover, a diffusion layer may be prepared at least in the part on an absorber. By establishing a diffusion layer, even when the space under a top sheet is not fully prepared by a wearer's posture etc., reducing the rate of absorption of urine, body fluid, etc. is lost, and it becomes possible to prevent leakage of urine, body fluid, etc. Being able to form a diffusion layer from the nonwoven fabric of hydrophilic liquid permeability, textile fabrics, porous plastics, curdy pulp, etc., polypropylene, polyethylene, polyester, rayon, pulp, or these bicomponent fibers are sufficient as the constituent, and it does not receive especially a limit. A diffusion layer is arranged between a top sheet and an absorber, and adhesion immobilization is carried out with adhesives etc. at an absorber.

[0027] [Sideseat] The part which forms solid gathers is liquid impermeability, and, as for a sideseat, it is desirable that the part which forms a side flap is liquid permeability. It is good to use the thing which performed hydrophilization processing to the side flap part of the sheet of liquid impermeability as a sideseat of such a configuration, or the thing which made the film of liquid impermeability rival into the solid gathers part of the sheet of liquid permeability. Since the interior is permeated in a side flap and it is absorbed with a hydrophilic sheet even when urine exceeds solid gathers by using the sideseat of such a configuration, the leakproofness of absorptivity goods can be raised.

[0028] The materials which form a sideseat may be a nonwoven fabric, textile fabrics, porous plastic film, etc. and these lamination ingredients, the bicomponent fiber which consists of two or more components, such as polypropylene, polyethylene, polyester, nylon or polyester, polypropylene, polyethylene, and nylon, is sufficient as the configuration fiber of textile fabrics and a nonwoven fabric, and especially, although the bicomponent fiber of low melting point polyester / polyester, polyester / polyethylene, and polypropylene/polyethylene is desirable from a strong field, especially a limit is not received.

[0029] [Elastic member] As an elastic member, the thing of the shape of the shape of yarn, such as nature, synthetic rubber, and urethane, and a string and a flat tip configuration is used according to an installation location. Arrangement of an elastic member is fixed to a sheet by adhesives.

[0030] [Adhesives] Although hot melt adhesive is used advantageously, water-soluble pastes, such as a starch system or CMC (carboxymethyl cellulose), or fluid high adhesives can be used for adhesives.

[0031]

[Example] Although a usage \*\*\*\* diaper is made into an example and the absorptivity goods of this invention are hereafter explained to a detail with a drawing, this invention is not limited to these. The perspective view in the condition of having developed the usage \*\*\*\* diaper of this invention to drawing 1 is shown. In drawing 1, the 1st solid gathers 7 formed in the sense among diapers and the 2nd solid gathers 8 formed outward are arranged, the circumference elastic body 9 of a foot is arranged further at the side edge section of the side flap 5. gathers are formed, and three-fold gathers are formed in the length-from-the-crotch-to-the-cuff field of edges on both sides to which a usage \*\*\*\* diaper meets the longitudinal direction as a whole.

[0032] some usage \*\*\*\* diapers which show drawing 2 to drawing 1 -- it is a notching flat-surface development view. In drawing 2 a usage \*\*\*\* diaper TOPPUSHI-TO 1 and a backseat 2, The absorber 4 which has been arranged among both [ these ] sheets and which was covered with the hydrophilic sheet 3 in both sides, The part into which a backseat 2 extends from the edges on both sides of an absorber 4, and the side flap 5 formed of the sideseat 6 arranged on it, It consists of 1st solid gathers 7 formed in the sense among diapers, and 2nd solid gathers 8 formed outward, and the circumference elastic member 9 of a foot is further arranged between the backseats 2 and sideseats 6 which form the side flap 5.

[0033] Drawing 3 is the sectional view which cut the usage \*\*\*\* diaper of drawing 2 by the X-X' line. In drawing 3, the 1st solid gathers 7 and the 2nd solid gathers 8 are formed of the sideseat 6. Namely, the sideseat 6 arranged from the side edge of the side flap 5, having applied on the absorber 4 is turned up on the way. Arrange an elastic body 11 in the state of expanding at the clinch point 10, and the boundary line of a junction field with the top sheet 1 located on the hydrophilic sheet 3 which extends from the edges on both sides of an absorber 4 is made into the standing up point 12. The 1st solid gathers 7 which turned to the inside of a diaper are formed, and an elastic body 14 is further arranged in the state of expanding in the side edge section 13 of the part by which the sideseat 6 was turned up. The part located in the standing up point 12 of the 1st solid gathers 7 of the sideseat 6 of the turned-up part is pasted up, it considers as the standing up point 15, the 2nd solid gathers 8 which turned to the outside of a diaper are formed, and the solid gathers of a V character mold are formed as a whole.

[0034] Even when the urine excreted by the top sheet 1 exceeds the 1st solid gathers 7 and the 2nd solid gathers 8 in the diaper of the above-mentioned configuration The side flap part of a sideseat is liquid permeability. Even between each origin 12 and 15 of these coexistence object gathers 7 and 8, and the arrangement part of the elastic member 9 of the side flap 5 Since it is absorbed with the hydrophilic sheet 3 which extends and exists from the absorber 4, urine etc. does not collect on a side flap part and can prevent the leakage.

[0035]

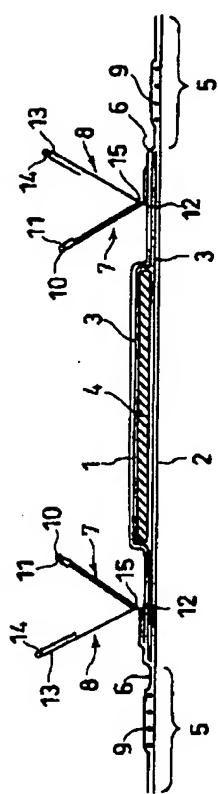
[Effect of the Invention] As explained above, TOPPUSHI-TO of liquid permeability [ this invention ], and the backseat of liquid impermeability. In the absorptivity goods which have the side flap which extends outside from the edges on both sides of the longitudinal direction of the absorber which has been arranged among both [ these ] sheets and has arranged hydrophilic sheets, such as tissue, to both

sides, and said absorber The 1st solid gathers arranged by the single sideseat at the inner sense, From the ability for the 2nd solid gathers arranged outward to be made to be able to stand up from TOPPUSHI-TO on the hydrophilic sheet which extended from the edges on both sides of an absorber, and to be formed Also to the urine which could form the 1st and 2nd gathers by few production processes, and exceeded the 2nd solid gathers, since the side flap part of a sideseat is liquid permeability It can absorb with the hydrophilic sheet of the outside of the 2nd gathers, and leakproofness high absorptivity goods can be offered.

[0036] moreover, \*\* -- since solid gathers are not arranged on the absorber which becomes high, spatial allowances arise. solid gathers are hard to be crushed between a wearer and an absorber, and \*\* is still lower -- especially, it becomes the thing excellent in the feeling of a fit in the length-from-the-crotch-to-the-cuff section, and has leakproofness high effectiveness. Moreover, compared with the manufacture approach which uses a single or two or more another members, and forms solid gathers, cutting and a lamination process become unnecessary, a process is simplified, and solid gathers are desirable on manufacture, in order to turn up a sideseat on the way and to form it.

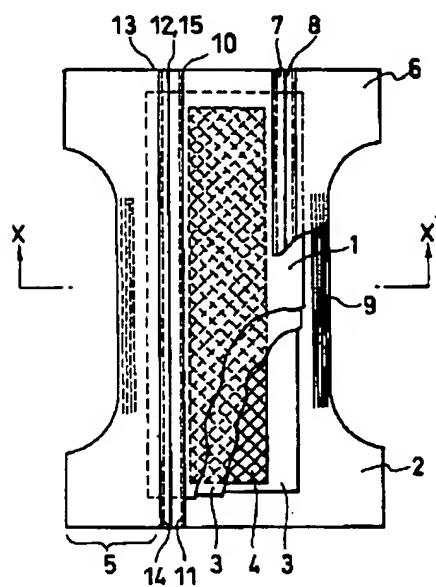
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## Drawing selection Representative drawing



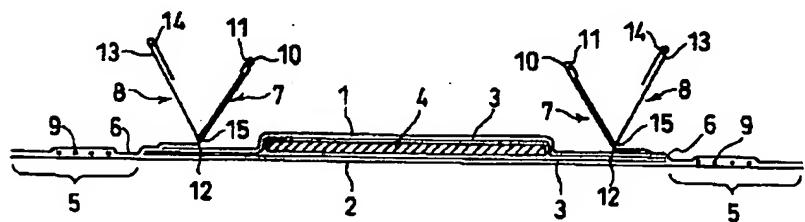
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Drawing selection drawing 2



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Drawing selection drawing 3



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